

Influence of fabrication errors on wake function
suppression in NC X-band accelerating
structures for linear colliders

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Abstract. Wake function suppression is effected by ensuring that the mode frequencies of an X-band normal conducting (NC) accelerating structure of multiple cells are detuned and moderately damped by waveguide manifolds attached to the outer wall of the accelerator. We report on the dilution in the wake function suppression that occurs due to errors resulting from the fabrication process. After diffusion bonding 206 cells a non-uniform expansion in the cell geometry forces a substantial shift in the frequencies of select cells. We remap all circuit parameters to these shifted cell frequencies to predict the wake function. Experiments performed on the SLC at the SLAC National Accelerator Laboratory indicate that the wake function is well predicted by the circuit model.

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